

**ABSTRACT OF THE DISCLOSURE**

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A moving coil motor has an axisymmetric magnetic field applied to the drive  
5 coils on the movable member of the motor. The movable member is suspended by  
springs. The moving coil motor may be configured in a MEMS format, with the movable  
member and its suspension springs fabricated from a mono-crystalline substance to  
improve structural integrity. MEMS based moving coil motors may be configured in an  
array. Sensors are provided to detect the relative spatial positions of the movable  
10 member. The movable member may include several tiers. In one application, the moving  
coil motor may be configured to support and drive a mirror surface on the movable  
member to form a galvanometer, optical switch, or other optical component. Singular  
moving coil motors may be configured in an optical cavity to facilitate the tuning of  
specific wavelengths while a number of moving coil motors may be configured to form  
15 an array of optical switches to facilitate switching in a multi-channel optical network.